Campylobacter Enteritis

Section 1: ABOUT THE DISEASE

A. Etiologic Agent

Campylobacter jejuni is the usual cause of campylobacteriosis, with 1% of cases caused by other species.

B. Clinical Description

The most common symptoms of campylobacteriosis are diarrhea (sometimes bloody), abdominal pain, malaise, fever, nausea, and sometimes vomiting. Infection can cause a spectrum of diseases ranging from mild, uncomplicated gastroenteritis to fulminant disease similar to acute appendicitis. Asymptomatic infections also occur. The illness is usually over within a week, but may be prolonged in some individuals and can sometimes relapse. Long-term complications include reactive arthritis and Guillain-Barré syndrome, a rare condition that affects the nerves of the body beginning several weeks after the diarrheal illness. This syndrome results in paralysis that lasts several weeks and usually requires intensive care. It is estimated that approximately 1 case in every 1000 reported campylobacteriosis cases leads to Guillain-Barré syndrome, and as many as 40% of Guillain-Barré syndrome cases in this country are triggered by campylobacteriosis.

C. Vectors and Reservoirs

C. jejuni (and other species of *Campylobacter* that may cause disease) are widely prevalent in the gastrointestinal tracts of many animals, notably cattle and poultry, although swine, sheep, and even pets such as birds, kittens, and puppies may be sources of human infection. A large percentage of raw poultry is contaminated with *C. jejuni*.

D. Modes of Transmission

Campylobacter is transmitted primarily by ingestion of food or water that has been contaminated with animal feces. Human-to-human fecal-oral transmission also occurs, but most cases of *C. jejuni* infection result from exposure to contaminated food and water. This includes raw and undercooked poultry or pork, inadequately treated drinking water, and raw milk and raw milk products. However, any food contaminated with the bacteria can be a source of infection. In addition, farm animals and pets, such as puppies, with diarrhea can be sources of infection. Person-to-person spread can also occur, especially among household contacts, pre-school children in daycare, the elderly, and developmentally disabled persons living in residential facilities. Transmission can also occur through certain types of sexual contact (e.g., oral-anal contact). A large dose of organisms is usually needed to cause infection, but the infectious dose may be lower for certain susceptible groups such as children, the elderly, and the immuno-compromised.

E. Incubation Period

The incubation period can vary from 1–10 days but is usually about 2–5 days, with shorter incubation periods probably associated with a larger infecting dose of bacteria.

F. Period of Communicability or Infectious Period

The disease is communicable for as long as the infected person excretes *Campylobacter* bacteria in his/her stool. This can occur from days to several weeks. People who are not given antibiotics have been known to shed these bacteria for as long as seven weeks.

G. Epidemiology

Campylobacter is the most common bacterial cause of diarrheal illness in the U.S., surpassing *Salmonella* in most studies. It is estimated that 2.5 million cases occur annually, with almost all cases occurring as isolated, sporadic events. Although outbreaks due to this organism have occurred, they are uncommon. Children and young adults have the highest incidence of infection, and although *Campylobacter* doesn't commonly cause death, it has been estimated that approximately 500 persons with *Campylobacter* infections may die each year.

H. Bioterrorist Potential

This pathogen is not considered to be of risk for use in bioterrorism.

Section 2:
REPORTING CRITERIA AND LABORATORY TESTING

A. What to Report to the Massachusetts Department of Public Health (MDPH)

Report isolation of *Campylobacter* species from any clinical specimen.

Note: See Section 3C for information on how to report a case.

B. Laboratory Testing Services Available

The MDPH State Laboratory Institute (SLI), Enteric Laboratory will test stool specimens for the presence of *Campylobacter* and will perform confirmatory testing and speciation on isolates from clinical specimens submitted by other laboratories. In addition, the SLI Enteric Laboratory requests submission of all *Campylobacter* isolates for further testing for disease surveillance purposes. For *C. jejuni* isolates, the SLI Enteric Laboratory accepts case-listings (instead of isolates) from those clinical laboratories that perform adequate testing for speciation (i.e., sodium hippurate hydrolysis, oxidase test, and Gram stain).

For more information on testing, call the SLI Enteric Laboratory at (617) 983-6609.

The SLI Food Microbiology Laboratory, at (617) 983-6610, will test implicated food items from case clusters or outbreaks for *Campylobacter*. See Section 4D for more information.

Section 3: REPORTING RESPONSIBILITIES AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To identify whether the case may be a source of infection for other persons (e.g., a diapered child, daycare attendee, or food handler), and if so, to prevent further transmission.
- To identify transmission sources of major public health concern (e.g., a restaurant or commercially distributed food product), and to stop transmission from such sources.

B. Laboratory and Health Care Provider Reporting Requirements

Campylobacter enteritis is reportable to the local board of health (LBOH). The MDPH requests that health care providers immediately report to the LBOH in the community where the case is diagnosed, all confirmed or suspect cases of campylobacter enteritis, as defined by the reporting criteria in Section 2A above.

Laboratories performing examinations on any specimens derived from Massachusetts residents that yield evidence of *Campylobacter* infection shall report such evidence of infection directly to the MDPH within 24 hours.

C. Local Board of Health (LBOH) Reporting and Follow-Up Responsibilities

Reporting Requirements

MDPH regulations *(105 CMR 300.000)* stipulate that campylobacter enteritis is reportable to the LBOH and that each LBOH must report any case of campylobacter enteritis or suspect case of campylobacter enteritis, as defined by the reporting criteria in Section 2A. Cases should be reported to the MDPH Bureau of Communicable Disease Control, Office of Integrated Surveillance and Informatics Services (ISIS) using an official MDPH *Enteric Disease Case Report Form* (found at the end of this chapter). Refer to the *Local Board of Health Timeline* at the end of this manual's *Introduction* section for information on prioritization and timeliness requirements of reporting and case investigation.

Case Investigation

1. It is the responsibility of the LBOH to complete a MDPH *Enteric Disease Case Report Form* by interviewing the case and others who may be able to provide pertinent information. Much of the information on the form can be obtained from the case's health care provider or from the medical record.
2. Use the following guidelines to assist in completing the form:
   a. Accurately record the demographic information, date of symptom onset, symptoms, and clinical information.
   b. When asking about exposure history (food, travel, activities, etc.), if possible, use the entire incubation period range of *Campylobacter* (1–10 days). Specifically, however, focus on the 2–5 days prior to the case's onset, which is the usual range.
   c. If possible, record any restaurants at which the case ate, including food item(s) consumed and date(s) of consumption. If you suspect that the case became infected through food, use the MDPH *Foodborne Illness Complaint Worksheet* (found at the end of this chapter) to facilitate recording additional information. It is requested that the LBOH fax or mail this worksheet to the MDPH Center for Environmental Health, Food

Protection Program (FPP); see top of worksheet for fax number and address. This information is entered into a database to help link complaints from other cities and towns, thus helping to identify a foodborne illness outbreak. *Note: This worksheet does not replace the MDPH Enteric Disease Case Report Form.*

d. Ask about travel history and outdoor activities to help identify where the case became infected.

e. Ask about water sources and contact because *Campylobacter* may be acquired through water consumption.

f. Household/close contact, pet or other animal contact, daycare, and food handler questions are designed to examine the case's risk of having acquired the illness from these contacts or the case's potential for transmitting it to these contacts. Determine whether the case attends or works at a daycare facility and/or is a food handler.

g. If you have made several attempts to obtain case information but have been unsuccessful (e.g., the case or health care provider does not return your calls or respond to a letter, or the case refuses to divulge information or is too ill to be interviewed), please fill out the case report form with as much information as you have gathered. Please note on the form the reason(s) why it could not be filled out completely.

3. After completing the case report form, attach laboratory report(s) and fax or mail (in an envelope marked "Confidential") to ISIS. The confidential fax number is (617) 983-6813. Call ISIS at (617) 983-6801 to confirm receipt of your fax. The mailing address is:

MDPH, Office of Integrated Surveillance and Informatics Services (ISIS)
305 South Street, 5th Floor
Jamaica Plain, MA 02130
Fax: (617) 983-6813

4. Institution of disease control measures is an integral part of case investigation. It is the responsibility of the LBOH to understand, and if necessary, institute the control guidelines listed in Section 4.

Section 4:
CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements *(105 CMR 300.200)*

Food handlers with *Campylobacter* must be excluded from work.

Note: A case of Campylobacter is defined by the reporting criteria in Section 2A of this chapter.

Minimum Period of Isolation of Patient

After diarrhea has resolved, food handling facility employees may only return to work after producing one negative stool specimen. If a case has been treated with an antimicrobial, the stool specimen shall not be collected until at least 48 hours after cessation of therapy. In outbreak circumstances, a second consecutive negative stool specimen will be required prior to returning to work.

Minimum Period of Quarantine of Contacts

Contacts who have diarrhea and are food handling facility employees shall be considered the same as a case and shall be handled in the same fashion. In outbreak circumstances, asymptomatic contacts who are food handling facility employees shall be required to produce 2 negative stool specimens, 24 hours apart. No restrictions otherwise.

Note: A food handler is any person directly preparing or handling food. This can include a patient care or childcare provider. See Glossary (at the end of this manual) for a more complete definition.

B. Protection of Contacts of a Case

None.

C. Managing Special Situations

Daycare

Since campylobacteriosis may be transmitted from person to person through fecal-oral transmission, it is important to follow up on cases of campylobacteriosis in a daycare setting carefully. General recommendations include:

- Children with *Campylobacter* infection who have diarrhea should be excluded until their diarrhea is gone.
- Children with *Campylobacter* infection who do not have diarrhea and are not otherwise ill may be excluded or may remain in the program if special precautions are taken.
- Since most staff in childcare programs are considered food handlers, those with *Campylobacter* in their stool (symptomatic or not) can remain on site, but they must not prepare food or feed children until their diarrhea is gone and they have 1 negative stool test (collected at least 48 hours after completion of antibiotic therapy, if antibiotics are given) (per *105 CMR 300.200*).

School

Since campylobacteriosis may be transmitted from person to person through fecal-oral transmission, it is important to follow up on cases of *Campylobacter* in a school setting carefully. The MDPH *Comprehensive School Health Manual* provides detailed information on case follow-up and control in a school setting. General recommendations include:

- Students or staff with *Campylobacter* infection who have diarrhea should be excluded until their diarrhea is gone.
- Students or staff with *Campylobacter* who do not handle food, do not have diarrhea or have mild diarrhea, and are not otherwise sick may remain in school if special precautions are taken.
- Students or staff who handle food and have *Campylobacter* infection (symptomatic or not) must not prepare food until their diarrhea is gone and they have 1 negative stool test (collected at least 48 hours after completion of antibiotic therapy, if antibiotics are given) (per *105 CMR 300.200*).

Refer to Chapter 8 of the MDPH *Comprehensive School Health Manual* for complete guidelines on handling diseases spread through the intestinal tract.

Community Residential Programs

Actions taken in response to a case of campylobacteriosis in a community residential program will depend on the type of program and the level of functioning of the residents.

In long-term care facilities, residents with campylobacteriosis should be placed on standard (including enteric) precautions until their symptoms subside and they have a negative stool culture for *Campylobacter*. Refer to the MDPH Division of Epidemiology and Immunization *Control Guidelines for Long-Term Care Facilities* for further actions. A copy can be obtained on the MDPH website at www.mass.gov/dph/cdc/epii/ltcf/ltcf.htm or by calling (617) 983-6800 or (888) 658-2850. Staff members who give direct patient care (e.g., feed patients, give mouth or denture care, or give medications) are considered food handlers and are subject to food handler restrictions under *105 CMR 300.200* (see Section 4A for more information). In addition, staff members with *Campylobacter* infection who are not food handlers should not work until their diarrhea is gone.

In residential facilities for the developmentally disabled, staff and clients with campylobacteriosis must refrain from handling or preparing food for other residents until their diarrhea has subsided and they have 1 negative stool test for *Campylobacter* (collected at least 48 hours after completion of antibiotic therapy, if antibiotics are given) (per *105 CMR 300.200*). In addition, staff members with *Campylobacter* infection who are not food handlers should not work until their diarrhea is gone.

Reported Incidence Is Higher Than Usual/Outbreak Suspected

If the number of reported cases of campylobacteriosis in your city/town is higher than usual or if you suspect an outbreak, investigate to determine the source of infection and the mode of transmission. A common vehicle (such as water, food, or association with a daycare center) should be sought, and applicable preventive or control measures should be instituted. Control of person-to-person transmission requires special emphasis on personal cleanliness and sanitary disposal of feces. Consult with the epidemiologist on-call at the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850. The Division can help determine a course of action to prevent further cases and can perform surveillance for cases across town lines, which would otherwise be difficult to identify at the local level.

Note: Refer to the MDPH Foodborne Illness Investigation and Control Reference Manual for comprehensive information on investigating foodborne illness complaints and outbreaks. Copies of this manual have been made available to LBOH. It can also be located on the MDPH website in PDF format at www.mass.gov/dph/fpp/refman.htm. For the most recent changes to the Massachusetts Food Code, contact the FPP at (617) 983-6712 or through the MDPH website at www.mass.gov/dph/fpp.

D. Preventive Measures

Environmental Measures

Implicated food items must be removed from use. A decision about testing implicated food items can be made in consultation with the FPP or the MDPH Division of Epidemiology and Immunization. The FPP can help coordinate pickup and testing of food samples. If a commercial product is suspected, the FPP will coordinate follow-up with relevant outside agencies. The FPP is reachable at (617) 983-6712.

Note: The role of the FPP is to establish policy and to provide technical assistance with the environmental investigation, such as interpreting the Massachusetts Food Code, conducting a Hazard Analysis and Critical Control Point (HACCP) risk assessment, initiating enforcement actions, and collecting food samples.

The general policy of the SLI is to test only food samples implicated in suspected outbreaks and not in single cases (except when botulism is suspected). The LBOH may suggest that the holders of the food implicated in single-case incidents locate a private laboratory that will test food or that they store the food in their freezer for a period of time, in case additional reports are received. However, a single confirmed case with leftover food consumed within the incubation period may be considered for food testing.

Personal Preventive Measures/Education

To avoid future exposure, recommend that individuals:

- Always wash their hands thoroughly with soap and water before eating or preparing food, after using the toilet, after changing diapers, and after touching their pets or other animals.
- Wash their own hands as well as the child's hands after changing a child's diapers.
- In a daycare setting, dispose of feces in a sanitary manner.
- Wash their hands thoroughly and frequently when ill with diarrhea or when caring for someone with diarrhea. Hands should be scrubbed for at least 15–20 seconds after cleaning the bathroom, after using the toilet or helping someone use the toilet, after changing diapers, before handling food, and before eating.
- Keep food that will be eaten raw, such as vegetables, from becoming contaminated by animal-derived food products.
- Avoid letting infants or young children come into contact with pets that are sick with diarrhea, especially puppies and kittens.
- Make sure to cook all food products from animals thoroughly, especially poultry products, and avoid consuming raw eggs or cracked eggs, unpasteurized milk, or other unpasteurized dairy products.

Discuss transmission risks that may result from oral-anal sexual contact. Latex barrier protection (e.g., dental dam) may prevent the spread of campylobacteriosis to a case's sexual partners and may prevent exposure to and transmission of other fecal-oral pathogens.

A *Campylobacter* Public Health Fact Sheet is available from the MDPH Division of Epidemiology and Immunization or on the MDPH website at www.mass.gov/dph. Click on the "Publications and Statistics" link, and select the "Public Health Fact Sheets" section under "Communicable Disease Control."

ADDITIONAL INFORMATION

The formal Centers for Disease Control and Prevention (CDC) surveillance case definition for campylobacteriosis is the same as the criteria outlined in Section 2A of this chapter. (The CDC and the MDPH use the CDC case definitions to maintain uniform standards for national reporting.) When reporting to the MDPH, always use the criteria outlined in Section 2A.

Note: The most up-to-date CDC case definitions are available on the CDC website at www.cdc.gov/epo/dphsi/casedef/case_definitions.htm.

REFERENCES

American Academy of Pediatrics. [*Campylobacter* Infections.] In: Pickering L.K., ed. *Red Book: 2003 Report of the Committee on Infectious Diseases, 26th Edition.* Elk Grove Village, IL, American Academy of Pediatrics; 2003: 227–229.

"*Campylobacter* Infections." Centers for Disease Control and Prevention. October 6, 2005. <www.cdc.gov/ncidod/dbmd/diseaseinfo/campylobacter_g.htm>.

CDC. Case Definitions for Infectious Conditions Under Public Health Surveillance. *MMWR*. May 2, 1997; 46(RR-10).

Heymann, D., ed. *Control of Communicable Diseases Manual, 18th Edition.* Washington, DC, American Public Health Association, 2004.

MDPH. *The Comprehensive School Health Manual*. MDPH, January 1995.

MDPH. *Control Guidelines for Long-Term Care Facilities.* Massachusetts Department of Public Health. 2002. <www.mass.gov/dph/cdc/epii/ltcf/ltcf.htm>.

MDPH. *Foodborne Illness Investigation and Control Reference Manual.* Massachusetts Department of Public Health. 1997. <www.mass.gov/dph/fpp/refman.htm>.

MDPH. *Regulation 105 CMR 300.000: Reportable Diseases, Surveillance, and Isolation and Quarantine Requirements.* MDPH, Promulgated November 4, 2005.

FORMS & WORKSHEETS

Campylobacter Enteritis

Campylobacter Enteritis

LBOH Action Steps

This form does not need to be submitted to the MDPH with the case report form. It is for LBOH use and is meant as a quick-reference guide to Campylobacter case investigation activities.

LBOH staff should follow these steps when *Campylobacter* is suspected or confirmed in the community. For more detailed information, including disease epidemiology, reporting, case investigation, and follow-up, refer to the preceding chapter.

- ❑ Notify the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850 to report any suspect or confirmed case(s) of *Campylobacter*.
- ❑ For *Campylobacter* suspected to be the result of food consumption, complete a MDPH *Foodborne Illness Complaint Worksheet* and forward to the MDPH Center for Environmental Health, Food Protection Program (FPP).
- ❑ Identify other potential exposure sources, such as a water source.
- ❑ Determine whether the case attends or works at a daycare facility and/or is a food handler.
- ❑ Identify other potentially exposed persons.
- ❑ Fill out the case report form (attach laboratory results).
- ❑ Send the completed case report form (with laboratory results) to the MDPH Bureau of Communicable Disease Control, Office of Integrated Surveillance and Informatics Services (ISIS).